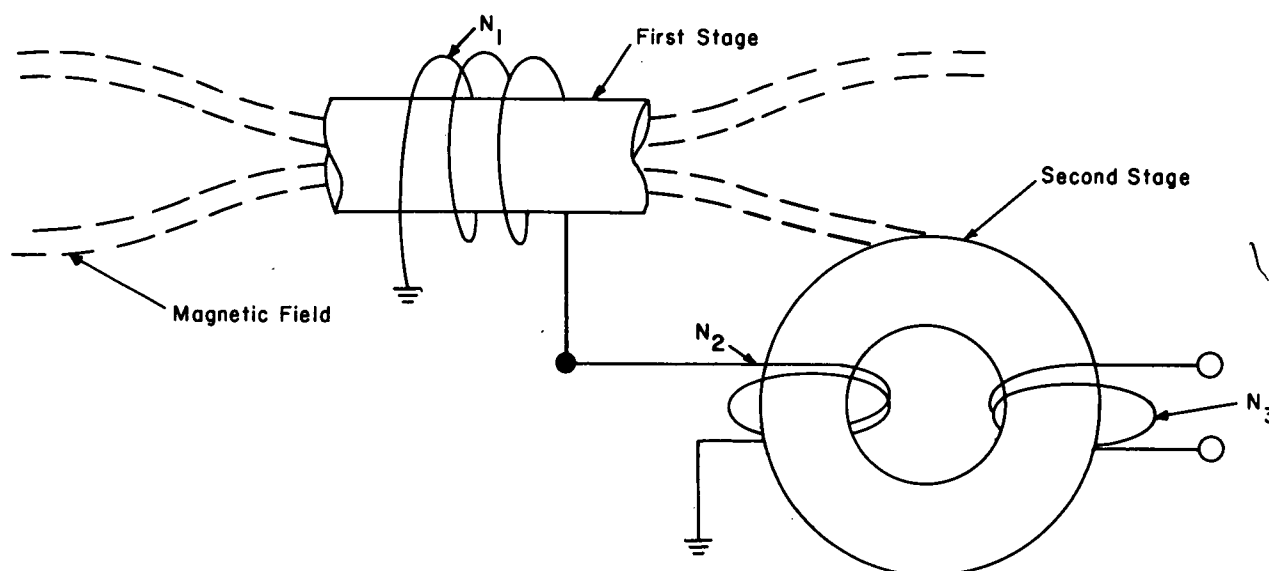


AEC-NASA TECH BRIEF



AEC-NASA Tech Briefs announce new technology derived from the research and development program of the U.S. AEC or from AEC-NASA interagency efforts. They are issued to encourage commercial application. Tech Briefs are available on a subscription basis from the National Technical Information Service, Springfield, Virginia 22151. Requests for individual copies or questions relating to the Tech Brief program may be directed to the Technology Utilization Office, NASA, Code KT, Washington, D.C. 20546.

Two-Stage Magnetometer Measures Weak Magnetic Fields



A sensitive two-stage magnetometer is capable of measuring field strengths of 10^{-8} gauss. In the first stage, a high permeability core is aligned parallel to the magnetic field. The second stage is a ferromagnetic toroid which saturates rapidly (optimum non-linear characteristics.)

The rate of change of flux in the first stage establishes a voltage between the ground points and the common terminal (see figure). This voltage generates magnetic flux lines in the second stage which are proportional to the flux lines existing in the first stage. The cross sectional areas, permeabilities of the two materials, and windings N_1 and N_2 control this ratio.

The permeability of the first stage is known. Since the magnetic induction is equal to the permeability times the field strength, the field strength may be

determined by measuring the output voltage at N_3 and, thus, the magnetic induction in the second stage. Adjustment of the turns ratio and area ratio of the first and second stages provides a wide range of sensitivities.

Note:

Requests for further information may be directed to:

Mr. Glenn K. Ellis
Technology Utilization Officer
Office of Information Services
U.S. Atomic Energy Commission
Washington, D.C. 20545
Reference: TSP72-10370

(continued overleaf)

Patent status:

Inquiries about obtaining rights for commercial use
of this invention may be made to:

Mr. George H. Lee Chief
Chicago Patent Group
U.S. Atomic Energy Commission
Chicago Operations Office
9800 South Cass Avenue
Argonne, Illinois 60439

Source: R. W. Buntinbach
U.S. Atomic Energy Commission
(AEC-10068)